



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

(Attorney Docket No. 01-1096)

Application of:

Fritz et al.

Serial No. 09/780,206

Filed: February 9, 2001

For: System for Simple Nucleic  
Acid Analysis

Examiner S. Chunduru

Group Art Unit: 1637

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**TRANSMITTAL LETTER**

In regard to the above identified application,

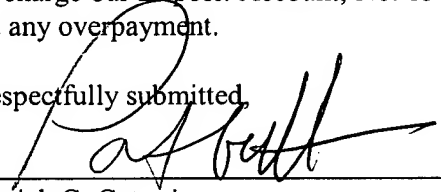
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- a) Reply Brief; and
- b) Return receipt postcard.

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- b) The Commissioner is hereby authorized to charge our Deposit Account, No. 13-2490 for any fees which may be required or to credit any overpayment.

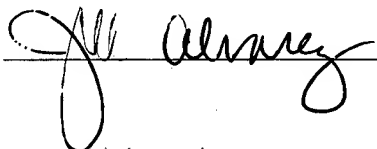
Respectfully submitted,

  
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05-15-07

AF/1637  
IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

(Attorney Docket No. 01-1096)

In re Application of:	)	
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Fritz et al.	)	Group Art Unit:1637
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Serial No. 09/780,206	)	Examiner: Chunduru, S.
	)	
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Acid Analysis	)	

REPLY BRIEF

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CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this paper is being deposited with the United States Postal Service with sufficient postage as U.S. Express Mail No. EV839380575US in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 14 day of May, 2007.

The Examiner's Answer acknowledges that the anticipation rejections are mainly based upon the teaching in the cited references of capillaries or channels that connect one or more reaction vessels. *See Answer, p. 8, second full paragraph.* Applicants agree that this is one of the main disagreements between the Applicants and the Examiner.

It is the Applicants' position that two reaction vessels, or "spaces," that are connected by a channel or capillary cannot be "at least a part of" the same space as presently claimed. In each of the references cited by the Examiner, the nucleic acid binding and amplification occur in two completely distinct vessels. The two spaces do not overlap or "are least a part of" each other as presently claimed. In each of the references, the channels or capillaries that connect the spaces do not participate in either binding or amplification. So there is no argument that somehow the channels themselves can be considered part of either space. Therefore, none of the references cited by the Examiner anticipate the claimed invention.

Applicants address some of the Examiner's particular points below.

**A.     *Zanzucchi, et al.***

The Examiner argues that the connecting channel between the wells of the apparatus described in *Zanzucchi, et al.* is "at least a part of" either the binding space or amplification space. But the channel participates in neither binding nor amplification of nucleic acids. Instead, the channel simply connects the two separate spaces in *Zanzucchi, et al.* The Examiner's convoluted argument attempts to distort the clear teaching of *Zanzucchi, et al.*, which is directed to two separate spaces for amplification and detection.

Also, Applicants disagree with the Examiner's conclusion that the claim recitation of "immobilizing DNA and separating impurities" does not differentiate the claims from the *Zanzucchi, et al.* The first well in *Zanzucchi, et al.* does not bind nucleic acids; the nucleic acids

are transferred to the second well. *See* col. 8, lns 7-10. Therefore Zanzucchi, *et al.* does not teach any structure to bind nucleic acids. On the other hand, the binding space of the presently claimed invention “immobiliz[es] the nucleic acids.” *See* claim 1. Therefore, unlike Zanzucchi, *et al.*, claim 1 clearly teaches structure for immobilizing nucleic acids in the binding space.

With regard to Examiner’s discussion regarding Zanzucchi, *et al.*’s teaching of the etching process (*see* Answer, paragraph bridging pp. 8-9), Applicants urge the Board to simply read col. 6, ln. 59 – col. 7, ln. 12, of Zanzucchi, *et al.* The Examiner’s distortion of the teaching of this section of Zanzucchi, *et al.* is apparent. In the Answer, the Examiner suggests that the *glass* layer of Zanzucchi, *et al.* is a heatable *metal* layer. (Answer, p. 10, lns. 1-2). The Examiner’s confusion of glass for metal highlights the lack of merit in the rejection.

**B. Yasuda, et al.**

The Examiner finds it irrelevant that Yasuda, *et al.* teaches the three chambers that are each controlled by their own individual heating element. (*See* Answer, p. 10, middle of bottom paragraph). To the contrary, however, the fact that the wells of Yasuda, *et al.* each have their own heating element shows that each well is distinct. This is unlike the present invention where “at least a part of the amplification space is identical to a part of the binding space.” Again, the Examiner attempts to use the connecting channels of Yasuda, *et al.* to show that the chambers of Yasuda, *et al.* are at least partially the same. But chambers cannot be partially identical if they are individually heated. Moreover, the connecting channels do not participate in either binding or amplification.

With regard to the heatable metal layer as presently recited in claim 40 and 79, the Examiner ignores Applicants’ argument that Yasuda, *et al.* teaches that this layer is so thin that the binding of nucleic acids to this layer can be observed from outside the vessel. *See* Yasuda, *et*

*al.*, col. 16, lns. 41-48. Yasuda, *et al.* does not teach that the layer is heatable, and the Examiner has no basis for asserting that it is.

### C. Fields

The Examiner argues that the three-way valve in the apparatus of Fields unites all three spaces, and therefore, reads on the “at least a part of” limitation of the claims. The Examiner’s interpretation of Fields goes to the heart of the disagreement between the Applicants and the Examiner. It is Applicants’ position that if two spaces are connected by tubes connected through a valve, the two spaces simply can not be part of the same space as presently claimed.

The Examiner asserts that paragraphs 0063 and 0072 of Fields disclose “capillary connection tubes [that] are temperature controlled blocks in the form of microplate or DNA chip.” (*See Answer*, p. 11, bottom of first full paragraph). This disclosure, however, fails to teach a capillary reaction vessel surrounded by a heatable metal layer as presently claimed.

### D. Andresen

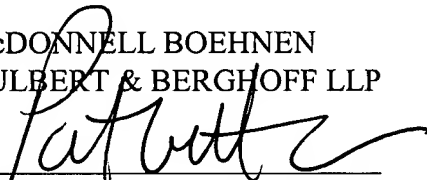
The Examiner again confuses metal and glass. (*See Answer*, p. 11, third line from the bottom). The fact that the vessel in Andresen is glass is not relevant to the claims. The question is whether a single heatable *metal* layer surrounds a capillary reaction vessel. Andresen does not teach this element of the claims. The Examiner’s suggestion that glass anticipates metal is simply not correct.

## II. Conclusion

Applicants have demonstrated that the rejections of claims 36-41, 68-73 and 76-79 are in error as a matter of law. Applicants therefore request reversal of the rejections and the allowance of the claims.

Respectfully submitted,

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